

## West American Scissurellidae

BY

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(Plate 56)

WEST AMERICAN SCISSURELLIDAE have not previously been reviewed. New records and innovations in the systematics of the west American species are offered, based on the review of the family in my dissertation (McLEAN, 1966).

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### SCISSURELLIDAE

**Diagnosis:** Shell small, porcelainous except for thin nacreous layer within; with few rapidly increasing whorls; turbate to depressed, umbilicate, often with reticulate sculpture. Outer lip with slit or foramen; operculum round, multispiral, with central nucleus.

The radula has a broad, cusped rachidian tooth, typically five cusped lateral teeth, and numerous serrate marginal teeth. The first four lateral teeth have broad basal areas; the fifth lateral is larger and more broadly cusped than the others (THIELE, 1929).

The Scissurellidae are small, white-shelled forms, generally living in sublittoral to abyssal depths. Species occur in tropical, temperate, and cool-water provinces.

Although out of date, the only comprehensive treatment of world Scissurellidae is that of PILSBRY in the Manual of Conchology (1890). The Japanese species have been reviewed by HABE (1951).

Two genera are represented in the west American fauna, *Scissurella* ORBIGNY, and *Sinezona* FINLAY.

### Key to the West American Genera of Scissurellidae

1. Outer lip with an open slit ..... *Scissurella*  
Outer lip with single perforation ..... *Sinezona*

### *Scissurella* ORBIGNY, 1824

*Scissurella* ORBIGNY, 1824, p. 340. Type species by SD of GRAY, 1847, *Scissurella laevigata* ORBIGNY, 1824. Recent, Mediterranean. PILSBRY, 1890 (1888-1898), vol. 12, p. 49; plt. 50, figs. 1-2.

**Diagnosis:** Shell with open slit on outer lip, producing a selenizone.

Two subgenera of *Scissurella* were recognized by KEEN in MOORE (1960): *Scissurella* s. str., and *Anatoma* WOODWARD. The former, not represented on the western coast of North America, shows a flattened spire, with the selenizone on the upper half of the whorl. The subgenus *Anatoma* is represented by 4 species in the northeastern Pacific. None are recorded from the Panamic or Peruvian Provinces.

### (*Anatoma*) WOODWARD, 1859

*Anatoma* WOODWARD, 1859, p. 204. Type species, by M, *Scissurella crispata* FLEMING, 1828.

**Diagnosis:** Spire somewhat elevated, selenizone on central portion of whorl; sculpture cancellate.

*Anatoma* WOODWARD is not an emendation of *Anatomus* MONTFORT, 1810, by explicit statement of WOODWARD. However, because many recent authors have been confused by the similarity of names they have erroneously used *Schizotrochus* MONTEROSATO, 1877, an objective synonym.

DALL (1921) listed two species of *Scissurella*: *S. kelseyi* DALL and *S. chiricova* DALL; both are here considered as synonyms of *S. crispata* FLEMING, a species widely distributed in the North Atlantic and North Pacific. Reported here as living representatives of the west American fauna for the first time are three additional species; *S. lyra* BERRY, previously known only from the early Pleistocene of southern California, *S. lamellata* (A. ADAMS), and *S. soyoae* (HABE) both previously known from Japan.

#### Key to the West American Species of *Scissurella* (*Anatoma*)

1. Edges of slitband sharply raised ..... 2  
Edges of slitband not sharply raised ..... *S. (A.) soyoae*
2. Axial and spiral sculpture of equal magnitude ..... 3  
Axial reticulations more pronounced than spiral  
ridges ..... *S. (A.) lamellata*
3. Spire elevated ..... *S. (A.) crispata*  
Spire depressed ..... *S. (A.) lyra*

#### *Scissurella* (*Anatoma*) *crispata* FLEMING, 1832

(Plate 56, Figures 1 to 4)

*Scissurella crispata* FLEMING, 1832, p. 385; plt. 6, fig. 3. FORBES & HANLEY, 1850 (1848-1853), vol. 2, p. 544; plt. 63, fig. 6. - JEFFREYS, 1865 (1862-1869), vol. 3, p. 283. - SARS, 1878, p. 126; plt. 8, fig. 7 [shell]; plt. III, fig. 4 [radula]. - PILSBRY, 1890 (1888-1898), vol. 12, p. 52; plt. 65, figs. 22-25; vol. 11, plt. 50, fig. 18 [radula, copy SARS]. - ODHNER, 1912, pp. 13, 36; plt. 2, figs. 25-27. - THIELE, 1929, p. 30, fig. 16. - FRETTER & GRAHAM, 1962, p. 488, figs. 255, 256 [animal]. - CLARKE, 1962, p. 6.

*Scissurella aspera* PHILIPPI, 1844, p. 160; plt. 25, fig. 17. - JEFFREYS, 1865 (1862-1869), vol. 3, p. 285 [under *S. crispata*].

*Scissurella crispata* var. *aspera* PHIL. - ODHNER, 1912, p. 13; plt. 2, fig. 25.

*Scissurella angulata* LOVÉN, 1846, p. 152. - JEFFREYS, 1865 (1862-1869), vol. 3, p. 285 [under *S. crispata*].

*Scissurella crispata* var. *angulata* LOV. - PILSBRY, 1890 (1888-1898), vol. 12, p. 52. - ODHNER, 1912, p. 13; plt. 2, figs. 26, 27.

*Anatomus japonicus* A. ADAMS, 1862, p. 347. - PILSBRY, 1890 (1888-1898), vol. 12, p. 59 [copy ADAMS]. - HABE & KOSUGE, 1964, p. 4.

*Schizotrochus japonicus* (A. AD.). - HABE, 1951, p. 65; plt. 11, fig. 9. - 1961, p. 2; plt. 1, fig. 7.

*Scissurella japonica* (A. AD.). - KURODA & HABE, 1952, p. 84.

*Anatoma japonica* (A. AD.). - HABE, 1964, p. 2; plt. 1, fig. 7.

*Scissurella crispata* var. *paucicostata* JEFFREYS, 1865 (1862-1869), vol. 3, p. 284. - ODHNER, 1912, p. 13 [under var. *aspera* PHIL.].

*Scissurella* (*Schizotrochus*) *kelseyi* DALL, 1905, p. 124.

*Scissurella kelseyi* DALL. - DALL, 1921, p. 183. - OLDROYD, 1927, p. 830. - KEEP, 1935, p. 139; fig. 105. - KEEN, 1937, p. 45. - BURCH, 1946, p. 23.

*Scissurella chiricova* DALL, 1919, p. 370. - 1921, p. 183. - OLDROYD, 1927, p. 830. - KEEN, 1937, p. 45. - BURCH, 1946, p. 23.

**Diagnosis:** Shell globose, delicate, translucent white, whorls 4 to 5. Selenizone at periphery, open about  $\frac{1}{5}$  the circumference; edges sharp, raised. Axial sculpture of fine raised lines, curved anteriorly above slit band, crossed by fine spiral lines of equal strength. Aperture rounded, oblique, peritreme nearly complete, outer lip thin, inner lip slightly reflected; umbilicus deep. Operculum multi-spiral, thin.

**Dimensions:** Holotype, *Scissurella kelseyi*, alt. 6.0, diam. 5.5 mm; holotype, *S. chiricova*, alt. 2.5, diam. 3.0 mm.

**Type Material:** Type, *Scissurella crispata* FLEMING, not located. Type locality: Noss Island, Shetland Islands, Scotland. Types of nominal forms regarded as synonyms: *S. aspera* PHILIPPI, not located; *S. angulata* LOVÉN, not located; 4 syntypes, *Anatomus japonicus* A. ADAMS, BMNH (M. KEEN, Plate 56, Figures 3, 4); *Scissurella crispata* var. *paucicostata* JEFFREYS, not located; holotype *S. kelseyi* DALL, USNM 181820 (unfigured, missing from vial, presumed lost), USFC sta. 4353, off Pt. Loma, San Diego County, California, 640 fms.; holotype, *S. chiricova* DALL, USNM 206509 (Plate 56, Figure 2), USFC sta. 3340, SE of Chirikof Island, Alaska, 695 fms.

**Distribution:** North Atlantic: Spitzbergen, south to the Mediterranean, Morocco, Azores; New England, West Indies (ODHNER, 1912). Western Pacific: Japan, south to 33° N on Pacific coast (*S. japonica*, KURODA & HABE, 1952). Eastern Pacific: Chirikof Island, Alaska (56° N, 156° W), south to Cedros Island, Baja California (28° N). Eastern Pacific records: off Queen Charlotte Island, British Columbia, USFC sta. 2860, 876 fms. (USNM 206690); SW of Cape Cook, Vancouver Island, British Columbia, 1110 fms. (Cowan Coll., 5649); off La Jolla, San Diego County, California, 100 fms. (Berry Coll., 3215); off North Coronado Island, Baja California, USFC sta. 4382, 656 fms. (USNM 208901, Plate 56, Figure 1); 30 miles off Cedros Island, Baja California, 500 fms. (Stanford Univ. Coll.). In addition, there are 3 lots from the San Diego area in the U. S. National Museum, taken in depths ranging from 565 to 822 fathoms.

Depth records of *Scissurella crispata* in the eastern Pacific range from 100 to 1100 fathoms. In southern California it is evidently not uncommon in depths of 500 to 800 fathoms, judging from its occurrence at the few stations made at these depths. ODHNER (1912) reported



it as occurring in depths of 10 to 1000 fathoms in the North Atlantic and CLARKE (1962) included it as an abyssal species with a depth record of 1215 fathoms. HABE (1964) reported a depth of 50 to 150 meters for *S. japonica*, regarded here as a synonym.

Remarks: An account of the living animal of *Scissurella crispata* was given by FRETTER & GRAHAM (1962).

The radula of *Scissurella crispata* was figured by SARS (1878), copied by PILSBRY (1890). The illustration shows fine cusps on the rachidian and inner lateral teeth, while the outer, or fifth, lateral points outward and has fine cusps on the inner margin. The finely cusped marginals are numerous.

In both the North Atlantic and North Pacific the species shows variation in shell height. The more depressed form has received the name *Scissurella angulata* LOVÉN in the North Atlantic and *S. chiricova* DALL in the North Pacific. ODHNER (1912) figured a series of specimens of *S. crispata* from the North Atlantic to show the variation in height.

Although *Scissurella crispata* has heretofore been recorded only from the North Atlantic, the nominal west American forms *S. kelseyi* DALL and *S. chiricova* DALL show no distinguishing characteristics, seem to exhibit the same ranges of variation, and are known from comparable depths. I find no differences whatever between specimens of *S. crispata* collected off Sambo Reef, Florida (USNM 449410), and a specimen from off La Jolla (SSB 3215), and therefore consider the populations of both oceans to be conspecific. Illustrations of *S. japonica* ADAMS given by Japanese authors apply equally well to eastern Pacific and North Atlantic specimens, suggesting that a single boreal species is involved, not unexpected in a species having a bathymetric distribution that includes abyssal depths.

*Scissurella crispata* is similar in proportion to *S. lamellata* but lacks the pronounced axial ribbing of the latter species.

*Scissurella (Anatoma) lamellata* (A. ADAMS, 1862)

(Plate 56, Figure 8)

*Anatomus lamellatus* A. ADAMS, 1862, p. 347. — PILSBRY, 1890 (1888-1898), vol. 12, p. 59.

*Schizotrochus lamellatus* (A. ADAMS), — HABE, 1951, p. 66; plt. 11, figs. 7, 8.

*Scissurella lamellata* (A. ADAMS). — KURODA & HABE, 1952, p. 84. "Scissurella kelseyi DALL." — TALMADGE, 1966, p. 83.

Diagnosis: Shell minute, translucent white, whorls 4. Selenizone at periphery, edges sharply raised, open  $\frac{1}{2}$  the circumference of the last whorl. Sculpture of fine spiral

lines and prominent, broadly spaced axial ridges. Aperture rounded, oblique, peritreme nearly complete, outer lip thin, inner lip slightly reflected; umbilicus deep.

Dimensions: Alt. 3.8, diam. 3.6 mm (HABE, 1961); alt. 1.8, diam. 2.2 mm (Baxter Coll.).

Type Material: Type, *Anatomus lamellatus* A. ADAMS, not located (probably BMNH). Type locality: "Mino-Sima, 63 fm.; Gotto, 71 fm.; O-Sima [Japan]" (ADAMS, 1862).

Distribution: Pacific Coast of Japan south to 33° N (KURODA & HABE, 1952), to Prince William Sound, Alaska (60° N, 147° W). Eastern Pacific records: Port Dick, Kenai Peninsula, Alaska, dredged (LACM, ex Baxter; Plate 56; Figure 8); McLeod Bay, Montague Island, Prince William Sound, Alaska, 25 fms. (R. Talmadge coll.). The species is reported from the eastern Pacific here for the first time. Along with *Scissurella soyoeae* HABE, it has probably been overlooked because of its minute size.

Alaskan specimens of *Scissurella lamellata* have been dredged on fine sand bottoms at moderate depths in association with *S. soyoeae*. HABE (1951) reported the species at 224 and 283 meters depth off the island of Honshu, Japan.

Remarks: *Scissurella lamellata* resembles *S. crispata* but differs in having pronounced axial sculpture rather than the fine even reticulate sculpture of the latter.

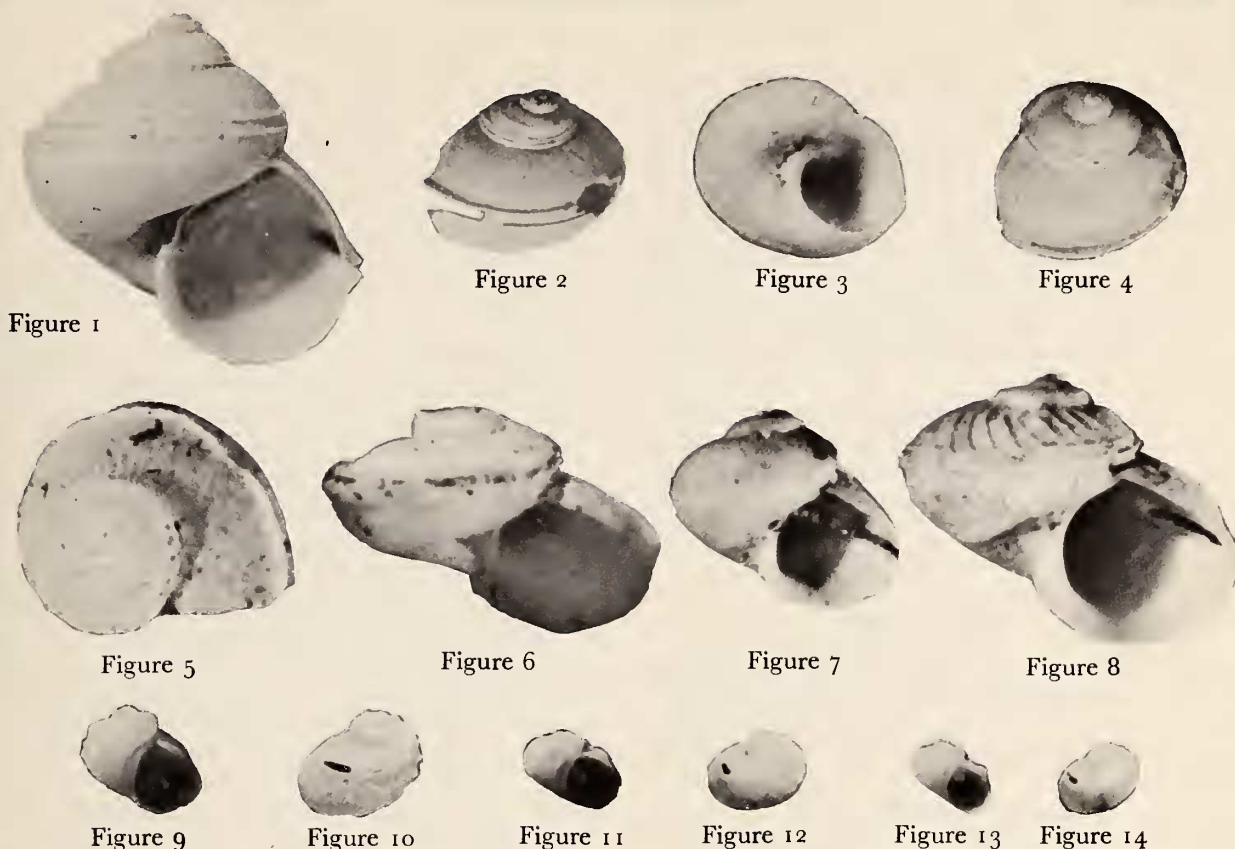
As is the case with *Scissurella soyoeae*, Alaskan specimens of *S. lamellata* are smaller than the Japanese specimen figured by HABE. In addition, the shell figured by HABE has a height greater than its diameter, rather than the contrary as indicated for the largest of the Alaskan specimens. However, HABE's illustration shows that the early whorls are more rapidly expanding than later whorls, suggesting that an additional whorl on the Alaskan specimens would produce a shell having similar dimensions. In features other than size, the Alaskan specimens agree with the illustrations of HABE.

*Scissurella (Anatoma) lyra* BERRY, 1947

(Plate 56, Figures 5, 6)

*Scissurella lyra* BERRY, 1947, p. 14; plt. 1, figs. 10, 11.

Diagnosis: Shell minute, translucent white, depressed, fragile; whorls  $3\frac{1}{2}$ , flattened above. Selenizone slightly above periphery, edges sharply raised, open  $\frac{1}{2}$  the circumference of last whorl. Axial sculpture of fine raised lines, curved anteriorly above slit band; spiral sculpture obsolete on apical surface, axial sculpture stronger than spiral sculpture on basal surface. Base moderately keeled; peri-



Figures 1 to 4: *Scissurella (Anatoma) crispata* FLEMING, x 8

1. Off North Coronado Island, Baja California, USFC sta. 4382, 656 fms; USNM 208901. Alt. 51mm.
2. Holotype, *Scissurella chiricova* DALL. Southeast of Chirikof Island, Alaska, USFC sta. 3340, 695 fms. USNM 206509. Alt. 2.5 mm.

3, 4. Syntypes, *Anatomus japonicus* A. ADAMS. BM(NH):

Figures 5, 6: *Scissurella (Anatoma) lyra* BERRY, x 25

Off Southeast Farallon Island, California. 45 feet. LACM. Alt. 1.0 mm.

Figure 7: *Scissurella (Anatoma) soyoae* (HABE), x 25

Off Port Dick, Kenai Peninsula, Alaska, 20 fm. LACM. Alt. 1.1 mm.

Figure 8: *Scissurella (Anatoma) lamellata* (A. ADAMS) x 25

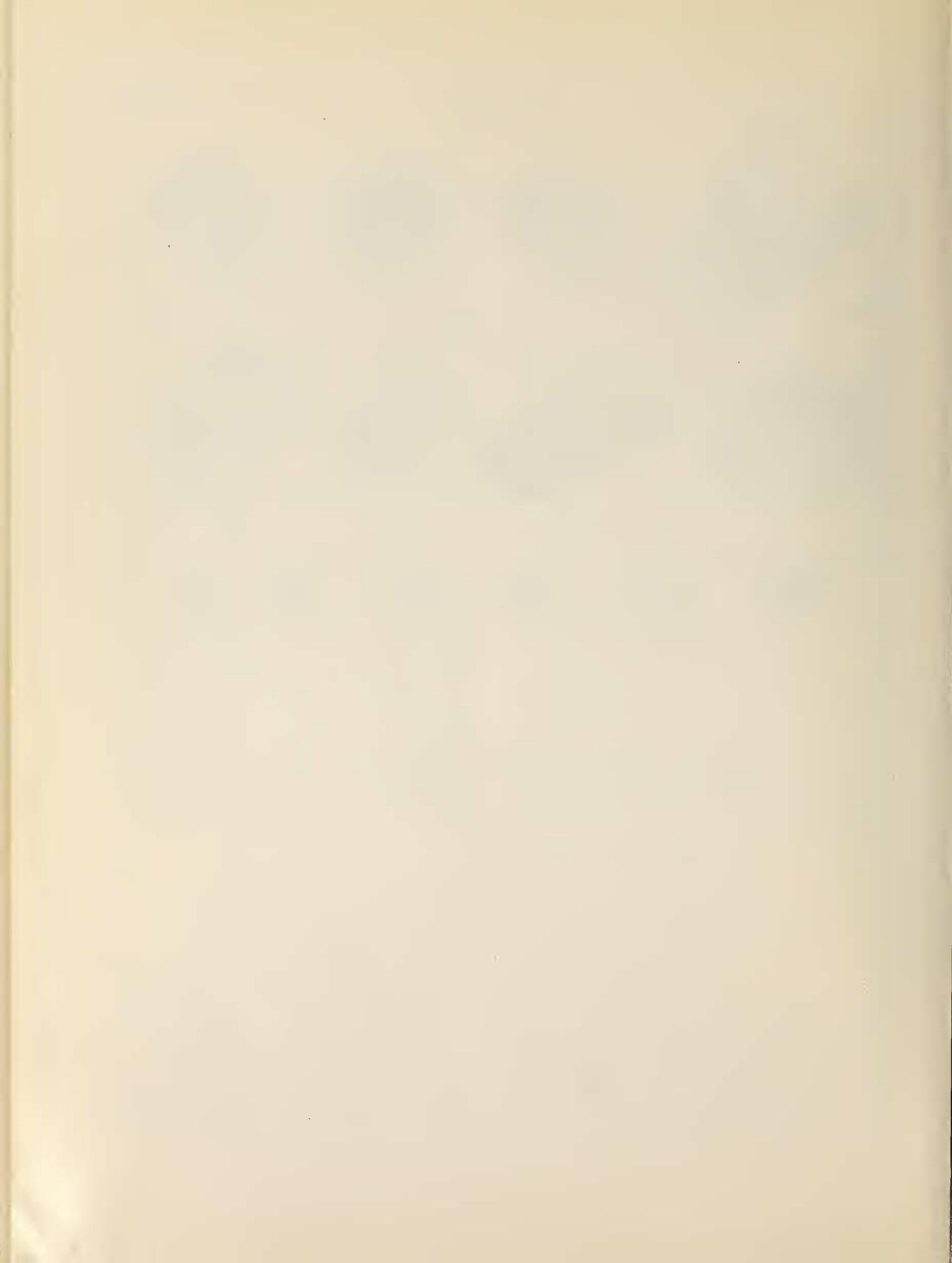
Off Port Dick, Kenai Peninsula, Alaska, 20 fm, LACM. Alt 1.6 mm

Figures 9 to 14: *Sinezona rimuloides* (CARPENTER), x 15

9, 10: Cannel Submarine Canyon, Monterey County, California, 80 feet. LACM. Alt. 1.0 mm.

11, 12: Punta Colorado, Guaymas, Sonora, Mexico. LACM. Alt. 0.75 mm.

13, 14: Iquique, Chile, LACM. Alt. 0.7 mm.





treme complete, pillar broadly flaring at base; umbilicus deep.

**Dimensions:** Holotype, alt. 1.0, diam. 1.4 mm; Recent specimen, alt. 1.0, diam. 1.5 mm (LACM).

**Type Material:** Holotype, *Scissurella lyra* BERRY, Berry Coll., 12000, paratypes 12009; 2 paratypes, Stanford Type Coll. 7869. Type locality: Lower Pleistocene (Lomita formation), near 2<sup>nd</sup> and Pacific Streets, San Pedro, Los Angeles County, California.

**Distribution:** Lower Pleistocene: Lomita formation, San Pedro; Santa Barbara formation, Bath-house Cliff, Santa Barbara, California (BERRY, 1947). Recent: off Southeast Farallon Island, California, 45 feet (1 specimen, LACM ex McLean, Plate 56; Figures 5, 6); Carmel Submarine Canyon, Monterey County, California, 100 feet (McLean, 2 specimens). Recent specimens of *Scissurella lyra* have been collected on gravel bottoms near rock in steeply sloping sublittoral depths of 40 to 100 feet. At present there are but 3 Recent specimens known, despite continued efforts to collect specimens from fine siftings, using flotation techniques for recovering foraminifera. Further collecting should considerably extend the range in California.

**Remarks:** *Scissurella lyra* may be an analogue of the North Atlantic species, *S. umbilicata* JEFFREYS, 1883 (PILSBRY, 1890, vol. 12, p. 52; pl. 51, figs. 31, 32), which is also lenticular in shape. According to PILSBRY, *S. umbilicata* is "devoid of sculpture," however. *Scissurella lyra* is smaller and less elevated than the depressed forms of *S. crispata*.

*Scissurella (Anatoma) soyoae* (HABE, 1951)

(Plate 56, Figure 7)

*Schizotrochus soyoae* HABE, 1951, p. 66; pl. 11, figs. 3, 4.

"*Scissurella chiricova* DALL." - TALMADGE, 1966, p. 83.

**Diagnosis:** Shell minute, yellowish, whorls 4, rapidly expanding, rounded at the periphery. Selenizone at periphery, edges not sharply raised, open  $\frac{1}{2}$  of the circumference of the last whorl. Sculpture of fine axial and spiral lines. Peritreme complete, pillar reflected over deep umbilicus.

**Dimensions:** Holotype, alt. 2.3, diam. 2.8 mm; Alaskan specimen, alt. 1.3, diam. 1.6 mm (Talmadge coll.).

**Type Material:** Holotype, *Schizotrochus soyoae* HABE, National Science Museum, Tokyo, Japan. Type locality: "Off Tsugaru Peninsula, Northern Honshu (Soyo-maru Station no. 647, 86 m. in depth)."

**Distribution:** Northern Honshu, Japan (140° E, 41° N), to Prince William Sound, Alaska (60° N, 147° W).

Eastern Pacific records: Port Dick, Kenai Peninsula, Alaska, 20 fms. (LACM, ex Baxter, Plate 56; Figure 7); McLeod Bay, Montague Island, Prince William Sound, Alaska, 25 fms. (Talmadge coll.). It occurs on bottoms of fine sandy mud. Further collecting in Alaska should considerably extend the range of this species, which has undoubtedly been overlooked, owing to its minute size.

**Remarks:** *Scissurella soyoae* has the turbinate outline of *S. crispata*, but differs in its smaller size, distinct yellow coloration, and absence of raised edges around the selenizone.

Specimens in the Talmadge and Baxter collections are smaller than the type specimen described by HABE, but the number of whorls is correspondingly less. They fit the description of *Scissurella soyoae* in every respect, including the yellowish cast of the shell.

*Sinezona* FINLAY, 1927

*Sinezona* FINLAY, 1927, p. 341. Type species, *Scissurella brevis* HEDLEY, 1904. Recent, New Zealand. Synonym, *Schismope* Auctt., non JEFFREYS.

*Coronadoa* BARTSCH, 1946, p. 281. Type species by OD, *C. simonsae* BARTSCH, 1946.

**Diagnosis:** Shell minute, white, turbinate, sculptured with axial folds and spiral striae. Foramen elongate, positioned in outer lip on final whorl, closed at lip margin; slitband with slightly raised edges; umbilicus deep.

*Sinezona* differs from *Scissurella* in having the slitband closed at the lip margin, fewer whorls, and a broader umbilical chink.

*Sinezona rimuloides* (CARPENTER) is the only species known in the west American fauna. DALL (1919) described the species "*Schismope*" *caliana*, but the foramen in the type specimen is clearly an accidentally acquired hole, removing the species from consideration in the family Scissurellidae.

*Coronadoa* BARTSCH, 1946, was based on immature specimens of *Sinezona rimuloides*, collected prior to development of the foramen. The slitband and foramen in this species does not appear until the shell reaches a height of 0.5 mm, which is the maximum dimension given by BARTSCH for *Coronadoa*. The early axial sculpture of *Coronadoa* is identical with that of *Sinezona rimuloides*, the shell is white, and the operculum is corneous and multispiral. BARTSCH felt that his genus *Coronadoa* should be placed in the superfamily Trochacea because of the rhipidoglossate radula. However, his radular illustration serves to place it in the family Scissurellidae, for it shows an enlarged outermost lateral tooth with fine cusps, a feature characteristic of the family (THIELE, 1929, p. 30).

*Sinezona rimuloides* (CARPENTER, 1865)

(Plate 56, Figures 9 to 14)

*Scissurella rimuloides* CARPENTER, 1864, p. 548 [nomen nudum]. — 1865, p. 271 [described]. — PILSBRY, 1890 (1888 - 1898), vol. 12, p. 68 [copy Cpr.]. — PALMER, 1951, p. 73; plt. 1, figs. 20 - 22 [Cpr. drawing of holotype]. — BRANN, 1966, p. 47; plt. 22, fig. 698 [Cpr. drawing].

*Schismope rimuloides* (Cpr.). — PILSBRY, 1903, p. 84. — DALL, 1921, p. 183. — OLDROYD, 1927, p. 831. — KEEN, 1937, p. 45. — BURCH, 1946 (1944 - 1946), no. 58, p. 23.

"*Schismope coronata* (WATSON)". — DALL, 1921, p. 183 [not *Scissurella coronata* WATSON, 1886].

"*Schismope californica* BARTSCH." — DALL, 1923, p. 4 [nomen nudum, intended for *S. coronata* WATSON of DALL, 1921]. — KEEN, 1937, p. 45 [as "*S. californica* DALL," nomen nudum]. — BURCH, 1946, p. 23 [nomen nudum].

*Coronadoa simonsae* BARTSCH, 1946, p. 281, figs. 1 [radula], 2 [operculum], 3 [shell].

**Diagnosis:** Shell minute, white, whorls 3, rapidly enlarging, suture distinct. Slitband on final whorl, edges raised; foramen elongate, close to shell margin. Axial sculpture of raised ridges, becoming obsolete on final whorl; spiral lirae on base of final whorl. Aperture oblique, peritreme complete, umbilical chink broad.

**Dimensions:** Average sized specimen, alt. 0.8, diam. 0.6 mm; holotype, *Coronadoa simonsae* BARTSCH, alt. 0.5, diam. 0.6 mm (BARTSCH, 1946).

**Type Material:** Holotype, *Scissurella rimuloides* CARPENTER, BMNH, Mazatlan coll., slide no. 1532 (M. Keen, personal communication). Type locality: Mazatlan, Sinaloa, Mexico. Type of nominal form regarded as synonym: lectotype (here designated), *Coronadoa simonsae* BARTSCH, USNM 346654; 2 paratypes, USNM 346655 (other original specimens believed lost), North Coronado Island, Baja California.

**Distribution:** Farallon Islands, California (36° N), to Mazatlan, Mexico (23° N). Iquique, Chile (20° S). Records: Southeast Farallon Island, 45 feet (McLean); Carmel Submarine Canyon, Monterey County, California, 80 feet (LACM ex McLean, Plate 56; Figures 9, 10); Middle Coronado Island, Baja California, 40 feet (LA CM); Punta Colorado, Guaymas, Sonora, Mexico (LA CM, ex Berry, Plate 56; Figures 11, 12); Iquique, Chile (LACM, ex L. Marincovich, Plate 56; Figures 13, 14). The specimens from Chile are indistinguishable from northern specimens. Although the species has been recognized in the Panamic province only from Guaymas and Mazatlan, it probably occurs throughout this faunal area since it is also present in the south temperate Peruvian province. The distribution of *Sinezona rimuloides* thus encompasses 4 faunal provinces: the Oregonian, Californian, Panamic, and Peruvian provinces.

*Sinezona rimuloides* is evidently not uncommon throughout its range. In California I have found it in the intertidal zone and in the sublittoral under-kelp zone at nearly all localities at which bottom samples have been collected. It is most easily recovered by flotation of the finely screened dry samples in heavy liquids.

**Remarks:** A radular description for *Sinezona rimuloides* may be taken from that given by BARTSCH for *Coronadoa simonsae* (the juvenile of *S. rimuloides*): "The radula has a 5-cusped rachidian tooth followed by three tricuspid laterals and a 9-cusped major lateral, which is succeeded by 14 4-cusped marginals." The outermost lateral of *Sinezona rimuloides* is not pointed as in *Scissurella crispata*. Laterals total 4, rather than the 5 indicated by THIELE (1929) in his diagnosis of the family.

Specimens of *Sinezona rimuloides* from the same locality often exhibit considerable variation in sculpture. Some specimens show little indication of the axial ribs; in some they become obsolete on the final whorl, while in other specimens they persist on the final whorl. The spiral sculpture on the base may be pronounced or nearly lacking. Position and size of the foramen are highly variable. The foramen is usually elongate but may be shortened, and in rare examples the slit is open to the edge of the lip.

*Sinezona rimuloides*, described from Mazatlan, had not been known in the Californian fauna until reported by PILSBRY (1903). DALL (1921) listed "*Schismope*" *rimuloides* and "*S.*" *coronata* WATSON. Later, DALL (1923) replaced "*S.*" *coronata* as follows: "Bartsch regards this as a new species which he calls *S. californica*." This introduction of the name *S. californica* made it a *nomen nudum* and the species has not since been validly described under the name, although it has come into use for the Californian form in faunal listings. However, Californian specimens differ in no way from specimens of *Sinezona rimuloides* from Guaymas, Mexico, in the Panamic province. I have not seen specimens from Mazatlan, but Carpenter's own drawings of the holotype (PALMER, 1951; BRANN, 1966) clearly indicate the same species. Disposition of *Coronadoa simonsae* has been discussed under the generic heading.

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